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(71) Applicant(s)
Lantek Electronics Inc
(Incorporated in Taiwan)
1F No 9 Lane 369, Ta Tung Road, Sec 3 Hsi Chih,
Taipei Hsien, Taiwan

(72) Inventor(s)
Tzu-Yen Hsiang

(74) Agent and/or Address for Service
Edward Evans & Co
Chancery House, 53-64 Chancery Lane, LONDON,
WC2A 1SD, United Kingdom

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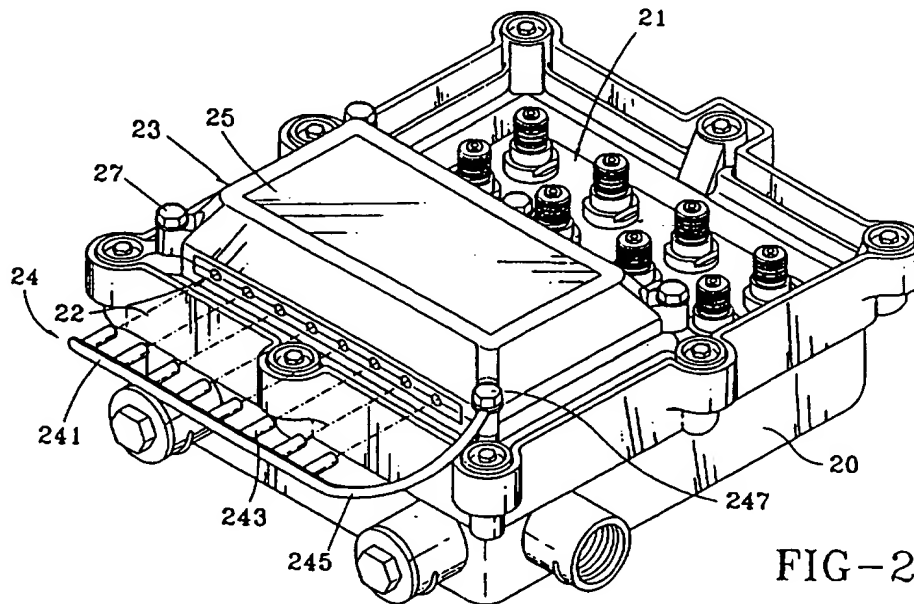
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US 4408813 A

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(54) Abstract Title
Plugging device of cable multi-tap

(57) An improved cable multi-tap for integrated distribution systems includes a main body 20, a plurality of output holes 22, and a plugging device 24 connected to the main body 20 without dropping down when it is not plugged into the output holes 22. The plugging device 24 is used to plug tightly the output holes 22. With the cable multi-tap of the invention, the plugging device 24 will not drop down when the repairman disassembles the on-line cable multi-tap to connect with secondary wires.



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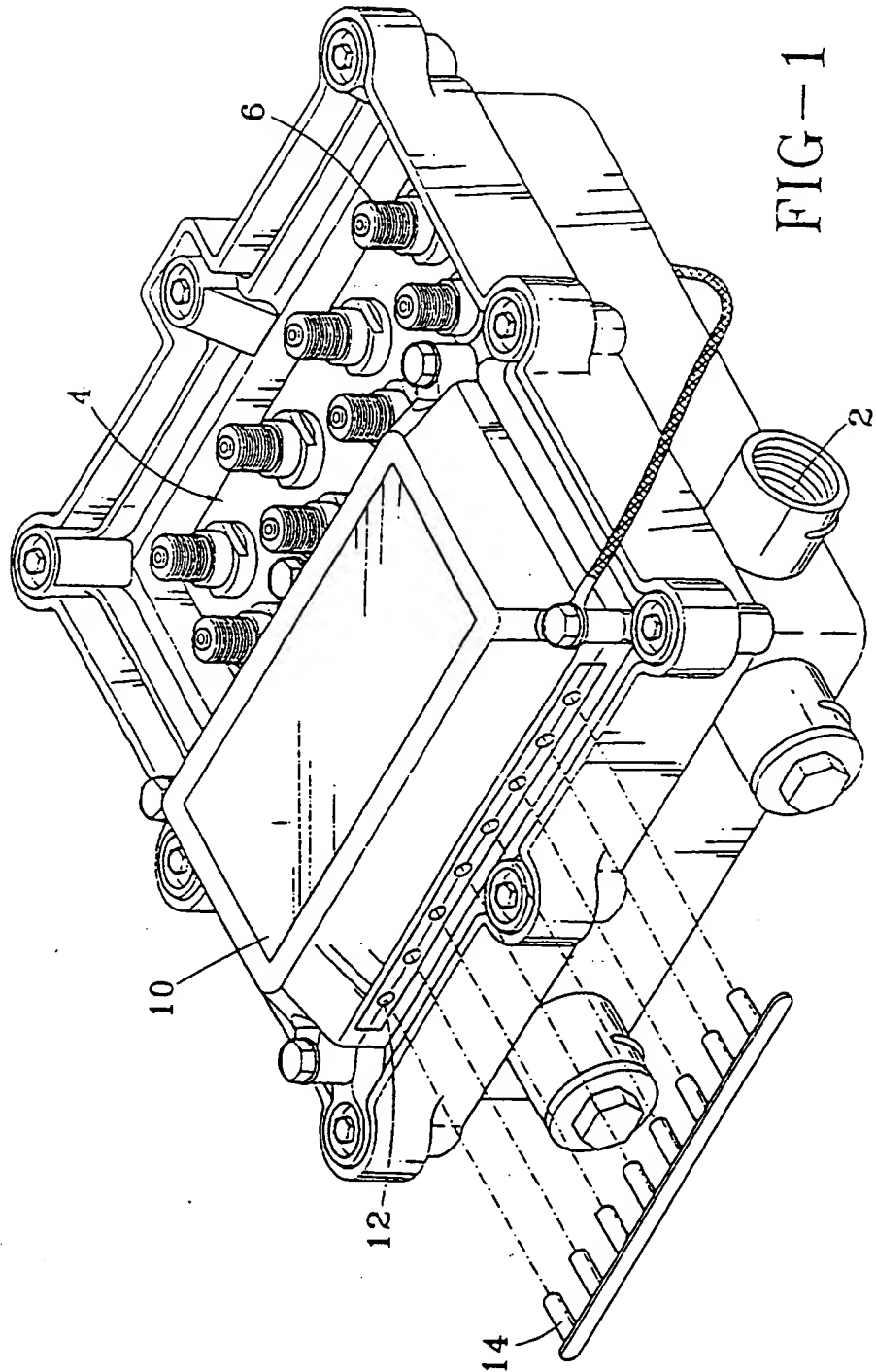


FIG-1

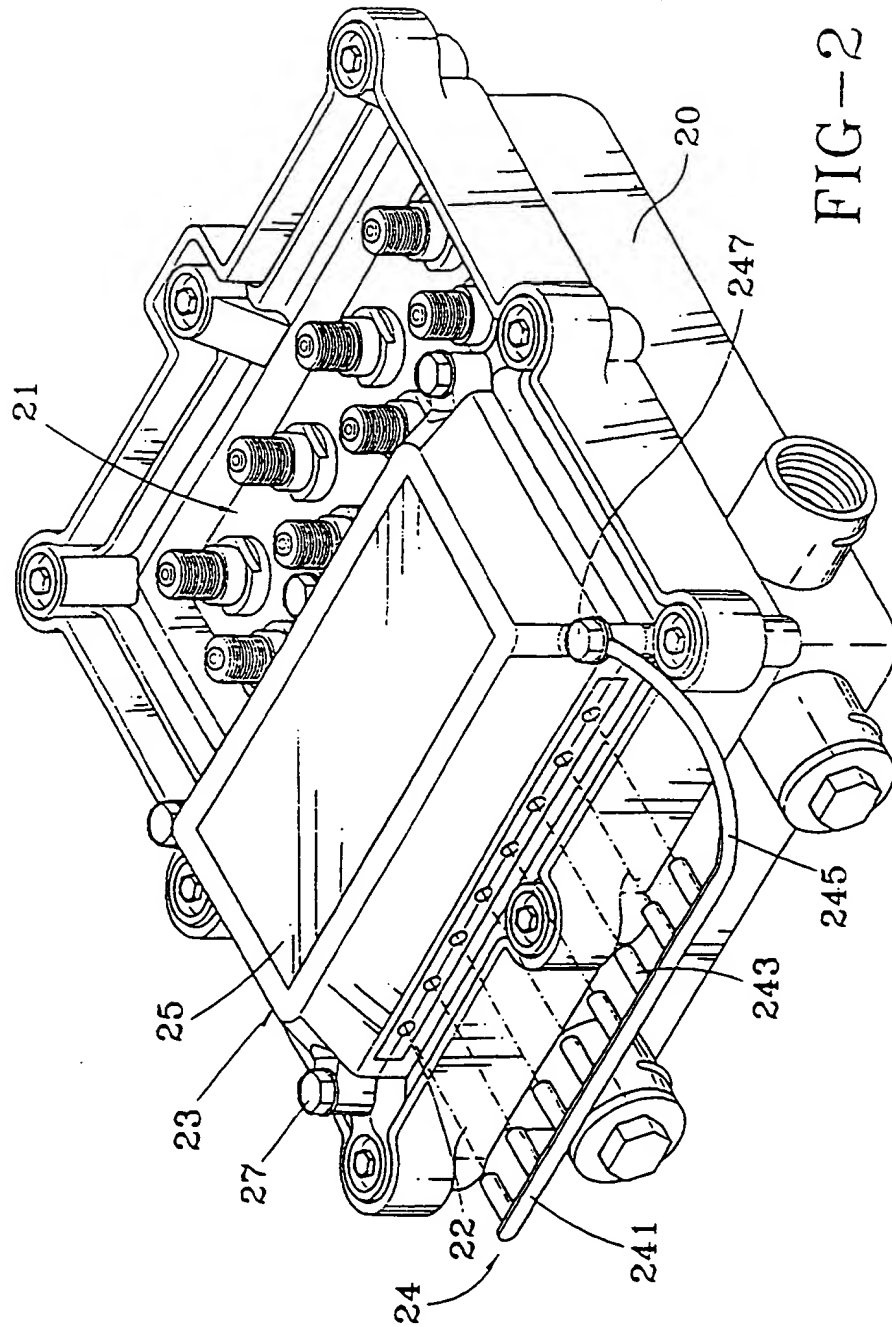


FIG-2

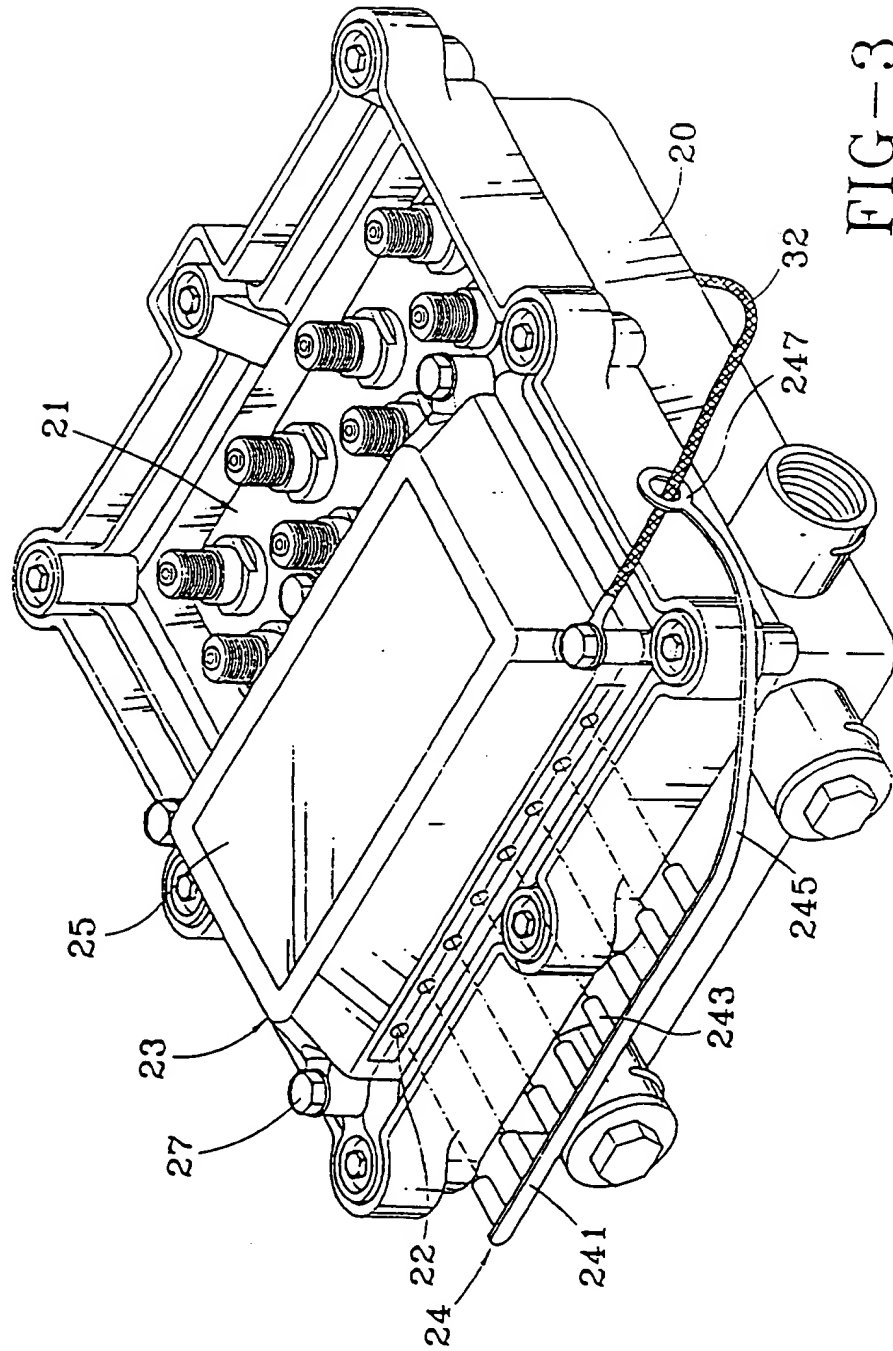
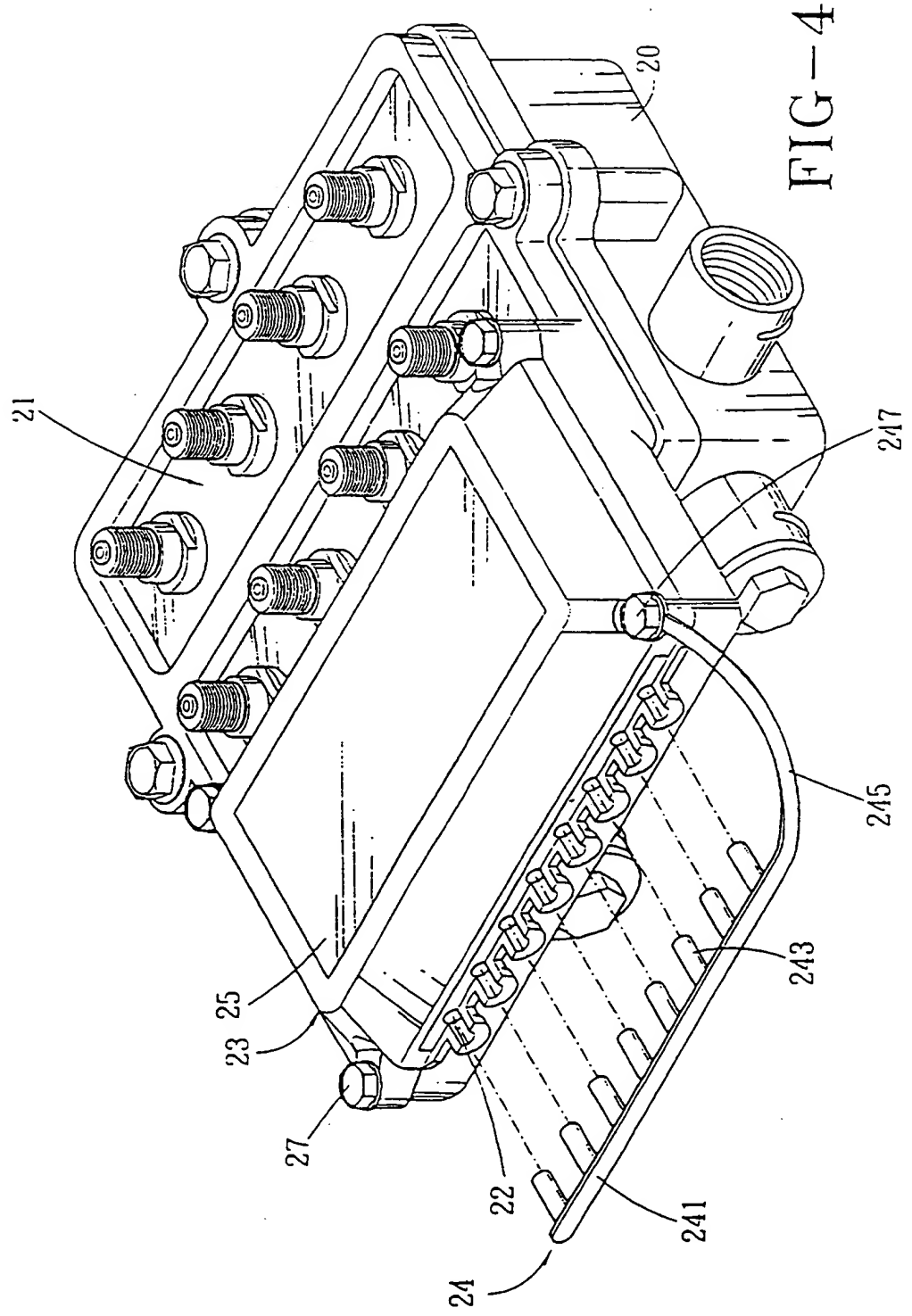


FIG-3



PLUGGING DEVICE OF CABLE MULTI-TAP

The invention relates to a cable multi-tap for integrated distribution systems, especially to a cable multi-tap with a plugging device.

As the cable television (TV) is more and more popular, almost each family has one cable TV terminal at their home. Through cable TV distribution systems, the television and communication signals can be immediately transmitted. Hence, the cable TV distribution system and the wire communication distribution system can be combined to an integrated distribution system. In cable TV, communication, or integrated distribution systems, it is typically necessary to tap off a television or communication signal from a main distribution cable for transmitting the television or communication signal into a customer's facility on a secondary cable. A well known device for accomplishing it is a cable multi-tap that permits connection to the main television or communication signal carrying cable and provides multiple outputs for individual connection to a number of customers, respectively. In general, cable multi-taps are mounted at outdoor and high locations and have to normally work under all-weather condition. Thus the configuration of a cable multi-tap is very important.

Please refer to FIG. 1 which is the perspective view of a cable multi-tap with a plugging device of the prior art. The cable multi-tap of the prior art for integrated distribution systems includes a television-signal-process unit 4 and a communication-signal-process unit 10. An input terminal 2 of the cable multi-tap is used for connecting with a main cable which carries a main signal including television and communication ones. The main signal is then tapped off by an electric circuit of the cable multi-tap through the input terminal 2. With the electric circuit, the television and communication signals are then separated from the tapped signal and transported to the television-signal-process unit 4 and the communication-signal-process unit 10, respectively. The television-signal-process unit 4 deals with the extracted television signal and transmits it to a secondary cable connected to a customer's facility through an output terminal (not shown) of the cable multi-tap. Similarly, the communication-signal-process unit 10 deals with the extracted communication signal

and brings it into a plurality of secondary wires (not shown) connected to customer's receivers through a plurality of output holes 12 of the cable multi-tap.

As shown in FIG. 1, when there is no secondary wire connected to the communication-signal-process unit 10, the output holes 12 are usually plugged with a plugging device 14 to prevent the internal electric devices (such as the communication-signal-process unit 10) of the cable multi-tap from being damaged by dust, moisture, or insect. However, when the repairman of integrated distribution systems disassembles the on-line cable multi-tap of the prior art to connect secondary wires, the plugging device 14 drops down easily. In addition, since the cable multi-taps are usually located at high places, this induces disadvantage for repairing.

A major problem of the cable multi-tap of the prior art is that since cable multi-taps are usually mounted at outdoor and high locations, the plugging device drops down easily when the repairman of integrated distribution systems disassembles the on-line cable multi-tap of the prior art to connect the secondary wires into customers' receivers, and this consequently induces disadvantage for repairing. The present inventor recognized the necessity for an providing improved cable multi-tap whose plugging device will not easily drop down when the repairman disassembles the on-line cable multi-taps of the invention to connect with secondary wires.

The objective of the invention is to provide an improved cable multi-tap for integrated distribution systems to which a plugging device is mounted.

With the problem of the prior art in mind, a cable multi-tap of the present invention includes a main body, a plurality of output holes, and a plugging device mounted to the main body and used to plug the output holes. The plugging device includes a base, a plurality of cylinders, and a connector connected with one end of the base, where the number of the cylinders is same as the number of the output holes. The cylinders locate on the base, and the distances between two adjacent cylinders and two adjacent output holes are the same. In addition, every cylinder is used to plug a corresponding output hole. The connector has an O-shape ring. Furthermore, the cable multi-tap of the present invention includes a cover screwed into the main body with bolts. The connector is screwed into the cable multi-tap by one bolt. When there is a cable connected to the cable multi-tap which the cable is

usually used for electric grounding, the connector will ring the cable. Hence, with the cable multi-tap of the invention, the plugging device will not be dropped down when repairman disassembles the on-line cable multi-tap of the invention to connect with secondary wires.

Other objects, features, and advantages of the invention will become apparent from the following detailed description of the preferred but non-limiting embodiments. The description is made with reference to the accompanying drawings in which:

FIG. 1 is the perspective view of a cable multi-tap of the prior art for integrated distribution systems;

FIG. 2 is the perspective view of a cable multi-tap of the invention for integrated distribution systems;

FIG. 3 is the perspective view of a cable multi-tap of the present invention with a connection of a plugging configuration device for integrated distribution systems; and

FIG. 4 is the perspective view of a cable multi-tap of the present invention with another connection of a plugging configuration device for integrated distribution systems.

Please refer to FIG. 2, which shows a cable multi-tap for integrated distribution systems. The cable multi-tap of this embodiment includes a main body 20, a plurality of output holes 22, and a plugging device 24 made of hard plastic. The main body 20 is partitioned into a television-signal-process unit 21 and a communication-signal-process unit 23. The output holes are located in the communication-signal-process unit 23. The plugging device 24 includes a base 241, a plurality of cylinders 243, and a connector 245 connected with one end of the base 241, where the number of the cylinders 243 is same as the number of the output holes 22. The cylinders 243 are properly located on the base 241, and the distances between every two adjacent cylinders 243 and every two adjacent output holes 22 are the same. In addition, every cylinder 243 is used to plug tightly a corresponding output hole 22. The connector 245 has an O-shape ring 247 at the end away from the base 241. Furthermore, the main body 20 of this embodiment includes a cover 25 screwed with a plurality of bolts 27. The O-shape ring 247 of the connector 245

is screwed into the main body 20 by one of the bolts 27. Hence, the plugging device 24 will not drop down when the repairman disassembles the on-line cable multi-tap of this embodiment to connect with secondary wires.

Please refer to FIG. 3, which shows another preferred embodiment of the invention. The only difference between this embodiment and the above embodiment of the invention is that the main body 20 of this embodiment further includes a cable 29 and the O-shape ring 247 of the connector 245 that rings the cable 29. Since the cable 29 is rigidly screwed into the main body 20 with one of bolts 27, the plugging device 24 will not drop down when the repairman disassembles the on-line cable multi-tap of this embodiment to connect with secondary wires.

Please refer to FIG. 4, which shows a further preferred embodiment of the invention. The only difference between this embodiment and the first embodiment of the invention is the different configuration near the output holes 22 of the cable multi-tap. Hence, with the same reason as the first embodiment, the plugging device 24 will not dropped down when the repairman disassembles the on-line cable multi-tap of this embodiment to connect with secondary wires.

It is noted that the cable multi-tap for integrated distribution systems described above are the preferred embodiments of the present invention only for the purposes of illustration, and are not intended as a definition of the limits and scope of the invention disclosed. Any modifications and variations that may be apparent to a person skilled in the art are intended to be included within the scope of the present invention.

CLAIMS

1. A cable multi-tap for integrated distribution systems comprising:
 - a main body;
 - a plurality of output holes; and
 - a plugging device used to plug into the output holes, connected to the main body without dropping down when the plugging device is not plugged into the output holes.
2. The cable multi-tap for integrated distribution systems as claimed in claim 1 wherein the plugging device comprises
 - a base;
 - a plurality of cylinders located on the base, used to plug the output holes; and
 - a connector elongated from the base, including an O-shape ring at the end away from the base.
3. The cable multi-tap for integrated distribution systems as claimed in claim 2 further comprises a cover screwed into the main body by a plurality of bolts and with the O-shape ring on one of the bolts.
4. The cable multi-tap for integrated distribution systems as claimed in claim 2 wherein the main body comprises
 - a cover screwed into the main body by a plurality of bolts; and
 - a cable linked up the main body by one of the bolts and ringed with the O-shape ring.
5. A cable multi-tap for integrated distribution systems comprising:
 - a main body including

a plurality of bolts,

a cover screwed by the bolts,

a cable linked up to the main body by one of the bolts;

a plurality of output holes; and

a plugging device connected to the main body without dropping down when the plugging device is not plugged into the output holes, including

a base,

a plurality of cylinders located on the base and used to plug into the output holes, and

a connector elongated from the base, having an O-shape ring at the end away from the base ringing the cable.

6. A cable multi-tap for integrated distribution systems comprising:

a main body including,

a plurality of bolts,

a cover screwed by the bolts,

a cable linked up to the main body by one of the bolts,

a plurality of output holes,

a plugging device connected to the main body without dropping down when the plugging device is not plugged into the output holes, including

a base,

a plurality of cylinders located on the base and used to plug into the output holes, and

a connector elongated from the base, including an O-shape ring at the end away from the base ringing the cable.

7. A cable multi-tap substantially as hereinbefore described with reference to and/or substantially as illustrated in any one of or any combination of Figs. 2 to 4 of the accompanying drawings.



Application No: GB 9810454.0
Claims searched: 1-7

Examiner: A J Rudge
Date of search: 11 December 1998

Patents Act 1977
Search Report under Section 17

Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK CI (Ed.P): H2E(EDBC,EDCN)

Int CI (Ed.6): H01R-11/11;H02G-15/10

Other: Online - EPODOC

Documents considered to be relevant:

Category	Identity of document and relevant passage	Relevant to claims
X	US 4,440,813 (Noma) - see the whole document	1 at least

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
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